MINICOM
ADVANCED SYSTEMS

IP Control

User Guide

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1. Welcome

Thank you for buying the IP Control system. This system is produced by Minicom Advanced Systems Limited.

This document provides installation and operation instructions for Minicom's IP Control. It is intended for system administrators and network managers, and assumes that readers have a general understanding of networks, hardware and software.

Technical precautions

This equipment generates radio frequency energy and if not installed in accordance with the manufacturer's instructions, may cause radio frequency interference.

This equipment complies with Part 15, Subpart J of the FCC rules for a Class A computing device. This equipment also complies with the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications. These above rules are designed to provide reasonable protection against such interference when operating the equipment in a commercial environment. If operation of this equipment in a residential area causes radio frequency interference, the user, and not Minicom Advanced Systems Limited, will be responsible.

Changes or modifications made to this equipment not expressly approved by Minicom Advanced Systems Limited could void the user's authority to operate the equipment.

Minicom Advanced Systems Limited assumes no responsibility for any errors that appear in this document. Information in this document is subject to change without notice.

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2. Introduction

The IP Control extends your KVM (keyboard, video, mouse) from any computer or server over TCP/IP via LAN, WAN or Internet connection. Now you can control, monitor and manage your servers from wherever you are, inside or outside the organization. The IP Control is a cost-effective hardware solution, for secure remote KVM Control & control of a computer/server from the BIOS level - independent of the OS. It is designed to connect to a single computer or to a KVM switch to Control multiple servers, over TCP/IP communication.

3. Key features

BIOS level control to any server's brand and model, regardless of the server condition and network connectivity, covering the entire spectrum of crash scenarios.

Compatible with all major operating systems. Supports many hardware and software configurations for the remote client and the target server computers, as well as the KVM switch in use.

Web-based Control - Browser Control to a target server, from any location via secured standard IP connection.

Multi-user view mode - Allows simultaneous users to view remote sessions. Remote control can be intuitively handed between users with appropriate permissions.

4. System components

The IP Control system consists of:

- 1 IP Control (p/n 1SU70017)
- 1 KVM cable (p/n 5CB00565)
- 1 RS232 Cross cable (p/n 5CB00566)
- 1 Universal power adapter (p/n 5PSB0005)

The RS232 Cross cable connects the IP Control to Serial manageable devices such as Power Management units, Routers, etc.

You can order brackets to rack-mount the IP Control.

5. The IP Control unit

Figure 1 illustrates the front panel of the IP Control.

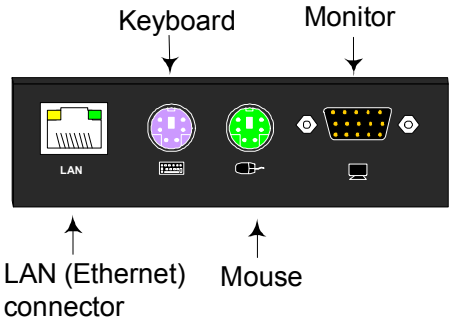

Figure 1 IP Control ports – side 1

For (optional) local access to the connected computer you connect a keyboard, monitor and mouse to the above KVM ports. You connect the IP Control to a 10/100 Mbit Ethernet using the LAN port.

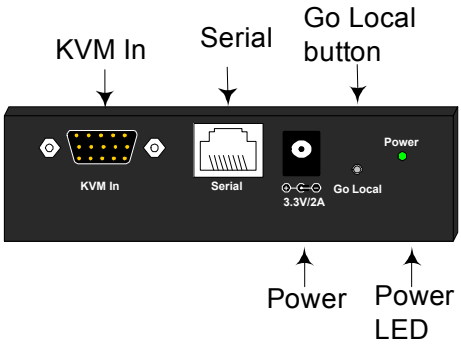

Figure 2 IP Control ports – side 2

You connect a computer or KVM switch to the KVM In port using the 1 to 3 CPU cable. You toggle between remote and local access by pressing the **Go Local** button.

You can connect an RS232 device to the Serial port using the RS232 Cross cable.

6. Pre-installation guidelines

Place cables away from fluorescent lights, air conditioners, and machines that are likely to generate electrical noise.

7. Terminology

Below are some terms and their meanings used in this guide.

Term	Meaning
Target server	The computers/servers that are accessed remotely via the IP Control.
Client computer	The PC running a remote IP Control session
Remote Session	The process of accessing and controlling Target Servers connected to IP Control from a User station

8. Client computer operating system

Windows 2000 or higher, with Internet Explorer 6.0 or later version. 128 bit encryption support is required if a secured connection is selected.

9. Connecting the system

Connect the Target Server / KVM switch to the IP Control as follows:

1. Connect the single connector of the KVM cable to the KVM In port of the IP Control.
2. Connect the other end of the KVM cable to the KVM ports of the Target Server / KVM switch.
3. Connect a Network cable to the IP Control LAN port and to an Ethernet port on your Network switch.
4. Connect the power adapter.

Figure 3 and Figure 4 illustrate the connections to a computer and KVM switch respectively, with the optional KVM console.

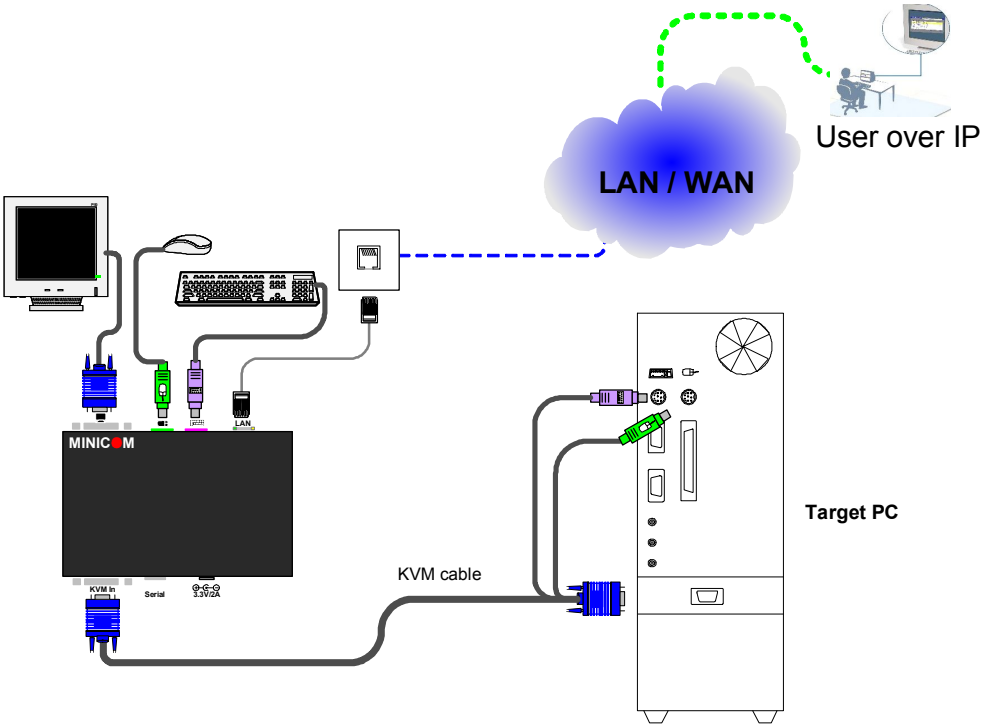

Figure 3 IP Control connections to a computer

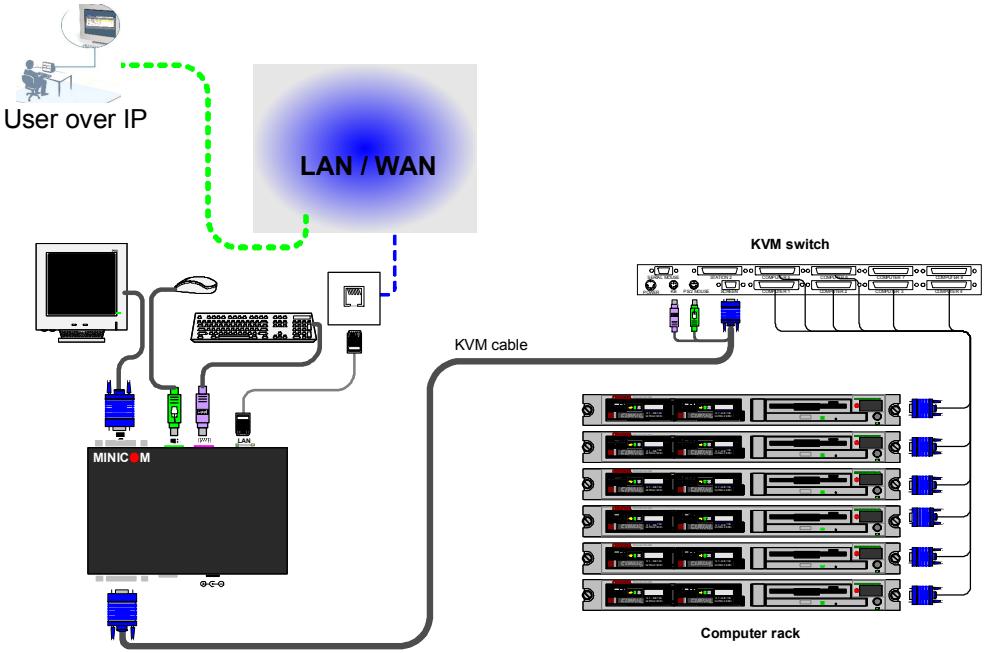

Figure 4 IP Control connections to a KVM switch

10. Initial settings

The following sections provide instructions for setting the IP address for the IP Control unit.

11. Default IP address

By default, IP Control boots with an automatically assigned IP address from a DHCP (Dynamic Host Configuration Protocol) server on the network. The DHCP server provides a valid IP address, gateway address and subnet mask.

To identify the IP address, the IP Control MAC address appears on the underside of the IP Control box. The device number (D.N.) can also be found there.

If no DHCP server is found on the network, IP Control boots with the static IP address:192.168.0.155.

Note! If a DHCP server later becomes available, the unit picks up the IP settings from DHCP server. To keep the static IP address, disable DHCP – explained in section 13.1 on page 10.

11.1 Static IP addresses for a number of units

Where you want to connect more than 1 IP Control to the same network and there is no DHCP server, or you want to use static IP addresses, do the following:

Connect the IP Control units one at a time and change the static IP address of each unit before connecting the next unit.

12. Logging into the Web interface

Complete the initial setup via the Web configuration interface:

1. Open your Web browser (Internet Explorer version 6.0 or higher).
2. Type the IP Control system IP address - https://*IP address*/config - and press **Enter**. The login page appears, see Figure 5.

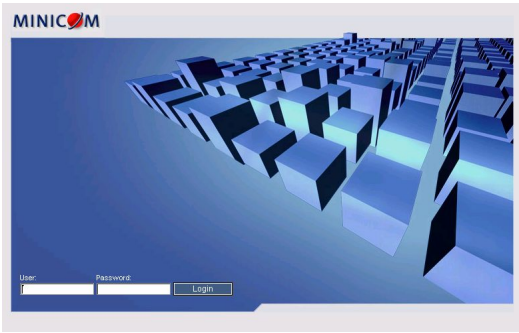

Figure 5 Login page

3. Type the default Administrator user name **- admin -** and password **- access -** (both lower case).
4. Press **Enter**. The Web interface opens at the Network Configuration page. See Figure 6.
5. Bookmark the page for easy reference.

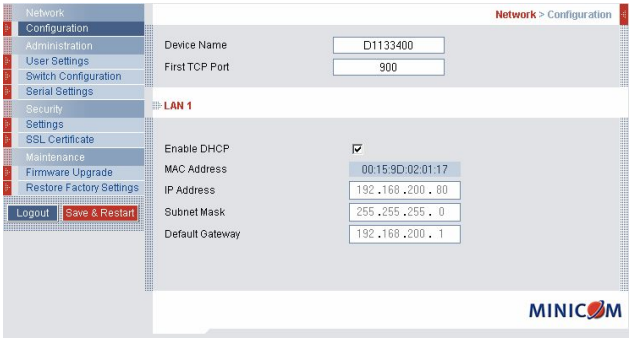

Figure 6 IP Control Web interface

12.1 SSL Certificate notes

When first connecting to IP Control's https configuration page, 2 browser security warnings appear. Click **Yes** to proceed.

The first warning disappears upon first IP Control client installation, when Minicom's root certificate is installed.

The second warning can be avoided by adding a line to your window's 'hosts' file (typically at \winnt\system32\drivers\etc\hosts – edit with Notepad)

The line format should be: ***any-IP any-name*.kvm.net**

Example:

10.0.0.200 IPControl.kvm.net

From now on, you can browse to IP Control by typing (or book-marking) https:// IPControl.kvm.net. Minicom dedicates the kvm.net domain to this usage. You can use any device name except for **www.kvm.net** which is reserved by Minicom.

13. Network > Configuration

Consult your Network Administrator for the network settings.

Device name - Type a name for the IP Control. Default device name consists of the letter 'D' followed by the 6-digit device number (D.N.) found on the silver label on the underside of the IP Control box.

First TCP Port - Choose 3 consecutive ports, and type in the first port number of the series. The default port – 900 – is suitable for the majority of installations.

Note

Firewall or router security access list must enable inbound communication through the selected TCP ports for the IP Control's IP address.

For Client computer access from a secured LAN, the selected ports should be open for outbound communication.

13.1 LAN 1

Under LAN 1 in Figure 6, is the following:

Enable DHCP – When a DHCP server is active on the same network to which IP Control is connected, DHCP provides automatic IP assignment.

When DHCP is disabled – (Recommended) – You can assign a fixed IP address to the IP Control.

Consult your Network Administrator regarding the use of the DHCP. **Note!** Where you have access to the server – your configured (or default) IP Control device name will appear on the DHCP server's interface, making it easy to locate.

When DHCP is disabled, enter the **IP Address, Subnet Mask,** and **Default Gateway** for **LAN 1**, as given by your Network Administrator.

14. Saving changes

Click Save & Restart to save any configuration changes and restart the IP Control system.

15. Administration > User Settings

From the menu click **User Settings**, Figure 7 appears.

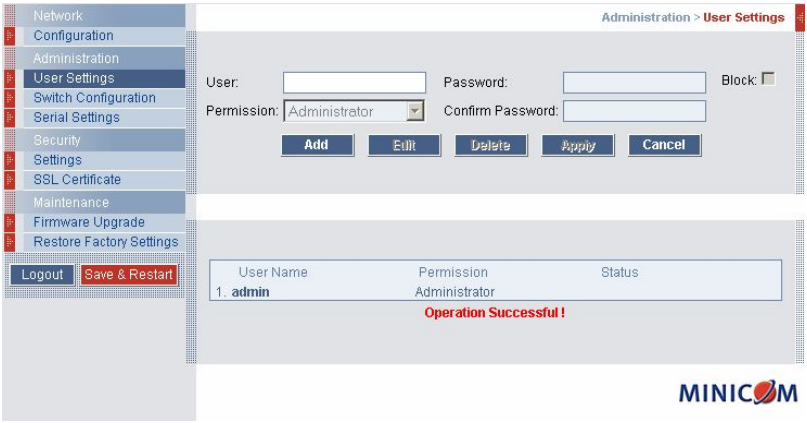

Figure 7 User Settings

On this page an Administrator creates and edits users.

There are 3 levels of user access:

- Administrator
- User
- View only

Administrator

An Administrator has unrestricted access to all windows and settings and can "take over" any active session (explained in section 23.1 on page 18). An Administrator can change the name and password of all users.

User

A User can access/control Target Servers, but cannot use the following:

- Advanced mouse settings
- Power cycle

A User has no access to the Web configuration interface.

View only

View only can view the screen of any Target Server without keyboard and mouse control. Only limited options appear such as switching Servers and Disconnect (Explained on pages 20 and 28). A "view only" indicator appears on the viewer's local mouse pointer.

15.1 Adding a user

To add a user:

1. Click Add and type a name and a password. The password must be at least 6 characters – letters or numbers, and must not include the user name, even if other characters are added. Depending on the security level chosen the user name and password parameters are different. See section 18 on page 15.
2. Select the permission type from the **Permission** box.
3. Click Apply, the user appears in the list of users.

15.2 Editing a user

To edit a user:

1. Select the user from the list.
2. Click Edit. You can now change all the parameters – user name, permission and password.
3. Click Apply, the changes are saved.

15.3 Deleting a user

To delete a user:

1. Select the user from the list.
2. Click Delete.
3. Click Apply, the changes are saved.

15.4 Blocking a user

An alternative to deleting a user is blocking a user. This means that the user's name and password is stored, but the user is unable to access the system. Check **Block** to block a user. Uncheck **Block** to allow the user access.

16. Administration > Switch Configuration

When a KVM switch is connected to the system, you must configure the switch in the system.

To do so:

1. From the menu click **Switch Configuration**. The KVM Switch Configuration window appear, see Figure 8.

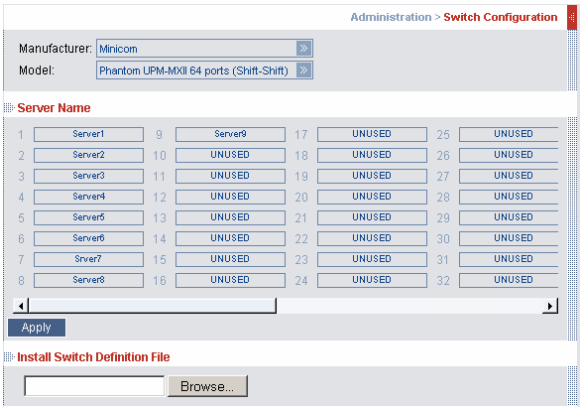

Figure 8 Switch Configuration

2. Choose the manufacturer and model of the connected KVM switch. The number of possible connected servers appears in the **Server Name** section.
3. Change the name of the connected servers by highlighting the server and typing a new name. Click Apply to save changes.

Note! Server names left as **UNUSED** cannot be accessed.

Install switch definition file

Where the KVM switch type is not listed in the manufacturer/model drop-down lists, contact Minicom to request an updated Switch Definition file with the desired KVM switch listed.

1. Load the file onto the Client computer.
2. Locate and install the KVM switch definition file. The switch definition file is updated.

17. Administration > Serial Settings

Where you have a Serial device connected to the system you must configure the RS232 settings.

To do so:

From the menu click **Serial Settings**, the **Serial Settings** appear, see Figure 9.

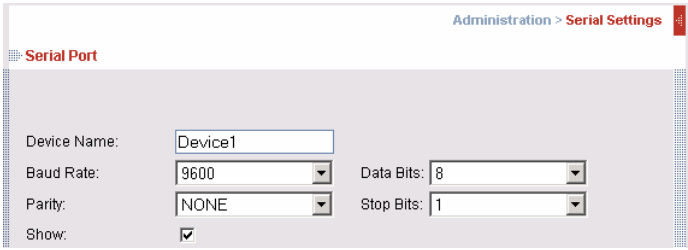

Figure 9 Serial Settings

Type a device name and choose the correct device parameters.

17.1 Show

Tick **Show** to make the Serial device appear in the list of servers/devices that can be accessed.

18. Security > Settings

Configure the security features, such as Account Blocking, Password Policy and Idle Timeout, as explained below.

From the **Security** section click **Settings**, the **Security Settings** appear, see Figure 10.

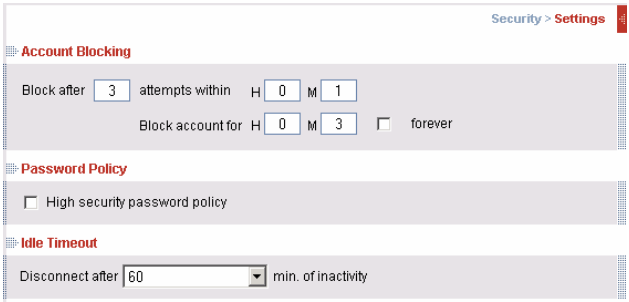

Figure 10 Security Settings

The security Settings elements:

Account Blocking – decide on the number of attempts to login with a wrong username or password after which there is a time lock or a total block.

Password Policy – You have the option of a standard or high security level of password. The table below shows the parameters of the 2 options.

Standard Security Password	High security Password
6 characters or more	8 characters or more must include at least 1 digit and 1 upper case letter and 1 “special” character as follows !@#$%^&*()_-+={[}]”’:;?/><
Must not include the user name	Must not include the user name

Check the box to enable the high security password policy. Unchecked, the standard security policy applies.

Idle Timeout – Select the Timeout inactivity period after which the user is disconnected from the system. Choose **No Timeout** to disable Timeout.

19. Security > SSL Certificate

You can install an SSL certificate.

To do so:

From the menu, select **SSL Certificate**, the install SSL Certificate box appears, see Figure 11.

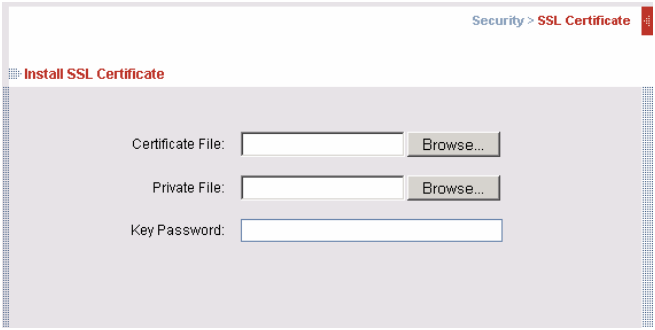

Figure 11 Install SSL Certificate box

Certificate File - Browse to locate the **cer** file.

Private File - Browse to locate the **private key** file.

Key Password - Type the "private key" password.

Click Save & Restart.

20. Maintenance > Firmware Upgrade

Upgrade the IP Control firmware to take advantage of new features. You can receive firmware upgrades by email or download them from Minicom's website. Save the firmware file on the Client computer.

From the menu select **Firmware Upgrade**. The Firmware Upgrade appears see Figure 12.

Figure 12 Firmware Upgrade

1. Locate and install the firmware file.
2. Click Start Upgrade. The upgrade starts. On completion, click Reboot. The unit reboots. After about 30 seconds the Login page appears.

Note!

Depending on the type of firmware upgrade, the following settings may be erased: User settings, KVM switch settings, mouse and video adjustments and RS232 settings. For more information refer to the firmware release notes.

The network settings remain intact.

21. Restore Factory Settings

You can restore the IP Control system to the factory settings. This restores the original IP Control parameters, resetting all the information added by the administrators, including: Network settings*, Servers, Switches, Users, Passwords etc.

* You have the option to preserve Network settings – explained below.

Warning! Once reset the data cannot be retrieved.

To restore factory settings:

1. From the menu select **Restore Factory Settings**. Restore Factory Settings appears see Figure 13.

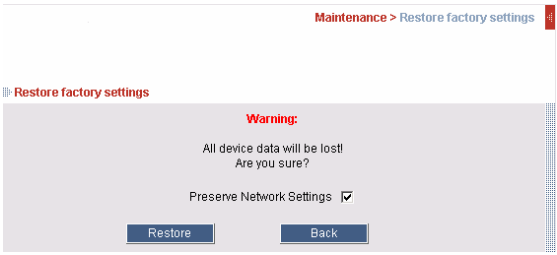

Figure 13 Restore factory settings

2. Check the box if you want to preserve Network settings.
3. Click Restore

22. Logging out

To exit the Configuration menu and close the session, click Logout.

Only one Administrator can log into the Configuration area at a time. An idle timeout of 30 minutes terminates the session.

23. Starting a remote session

At a Client computer open Internet Explorer (6.0 and above) and type the IP Control's IP address. https://IP address. The Login box appears. Type your username and password and press Enter. By default, the user name is: **admin** and the password is **access**, (both lower case).

On first connection install the Minicom certificate and ActiveX control. You must login as an Administrator to your computer to install the ActiveX control. Once the ActiveX control is installed, all types of users can login.

The screen of the Target Server connected directly to IP Control, or the currently selected server on the KVM switch with IP Control toolbar appears see Figure 14.

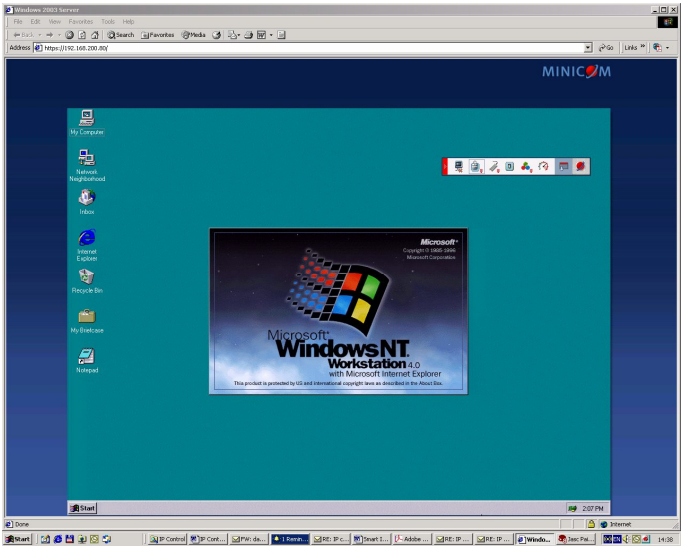

Figure 14 Remote session window

23.1 Taking over a busy remote session

When connecting to a busy Target Server an Administrator has the option to take over the Target Server. A User only has this option when the current session is run by another User, but not by an Administrator. The following message appears

Figure 15 Busy remote session options

Choose to take over or view only or cancel.

23.2 Full screen mode

Work on the Target Server as if you are working on a local computer, with full screen mode.

To work in full screen mode:

1. Ensure that the Client computer has the same screen resolution as the Target Server.
2. Press **F11**. The Internet Explorer window disappears, leaving the Internet Explorer menu bar at the top.
3. Right click the Internet Explorer menu bar and check Auto-Hide. The Internet Explorer menu bar disappears. You are in full screen mode.

To exit full screen mode:

Press **F11**. Or place the mouse at the top of the window to display the Internet Explorer toolbar and click the Restore button.

Note! Full screen mode can also be activated from the Toolbar menu, see page 28.

23.3 Moving or hiding the Toolbar

The Toolbar can be dragged and dropped to anywhere on the screen, by clicking and dragging the logo .

To hide the Toolbar, either:

Double-click the IP Control System tray Icon .

Or

Press **F9**.

To display the Toolbar repeat the above actions. See also page 28.

To minimize the Toolbar:

Click the arrow . Click again to maximize the Toolbar.

23.4 Switching to a different server/device

To connect to a different server/device:

1. From the Toolbar, click , or right-click . A list of connected servers/devices appears.
2. Click the desired server or Serial device. The screen of the server or the Serial device window appears.

23.5 Changing the performance settings

You can alter the bandwidth settings from the Toolbar.

To alter the settings:

From the Toolbar, click . The Settings.. box appears, see Figure 16.

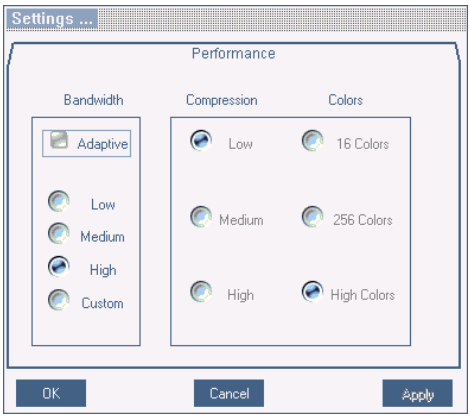

Figure 16 Settings.. box

Bandwidth

Choose from the following options

Adaptive – automatically adapts to the best compression and colors.

Low - Select Low for high compression and 16 colors.

Medium - Select medium for medium compression and 256 colors. Medium is recommended when using a standard internet connection.

High - For optimal performance when working on a LAN, select High. This gives a low compression and high colors (16bit).

Custom – You cam choose your own compression and color levels.

Click **OK**. The screen of the last accessed Target Server appears.

23.6 Adjusting the Video settings

To change the video settings:

From the Toolbar, click . You have the following options:

- Refresh
- Manual Video Adjust
- Auto Video Adjust

Each option is explained below.

23.6.1 Refresh

Select Refresh or press **Ctrl+R** to refresh the Video image. Refresh may be needed when changing the display attributes of a Target Server.

23.6.2 Manual Video Adjust

Use the manual video adjustment for fine-tuning the Target Server video settings after auto adjustment or for adapting to a noisy environment or a non-standard VGA signal or when in full-screen DOS/CLI mode.

To adjust the video manually:

1. Click Manual Video Adjust. A slider bar appears. See Figure 17. Also a red frame appears around the screen. This represents the screen area according to the Server's screen resolution. Perform the adjustments inside and relative to this frame.

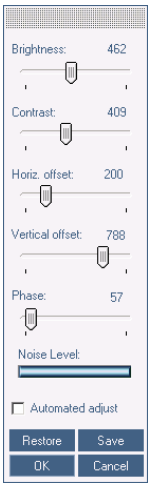

Figure 17 Manual Video Adjustments controls

2. Move the sliders to change the displayed image. Click in the area of the sliders for fine-tuning.

Brightness / Contrast - use the scales to adjust the brightness and contrast of the displayed image.

Horizontal Offset - defines the starting position of each line on the displayed image.

Vertical Offset - defines the vertical starting position of the displayed image.

Phase - defines the point at which each pixel is sampled.

Noise Level - represents the Video "noise" when a static screen is displayed.

Automated adjust – When checked, the video adjusts automatically whenever there is a change in the screen resolution.

23.6.3 Auto Video Adjust

To adjust the video automatically:

We recommend opening Windows Explorer (or similar) in the background.

Click **Auto Video Adjust**. The process takes a few seconds. If the process runs for more than 3 times, there is an abnormal noise level. Check the video cable and verify that no dynamic video application is running on the Target Server's desktop.

Perform the procedure where necessary for each Target Server or new screen resolution.

23.7 Power cycle

KB-Power™ and KB-Power IPMI™ offer remote power control via a remote session.

To shut down and restart the Target Server via KB-Power™ / KB-Power IPMI™:

From the Toolbar, click . A prompt appears. Click yes to continue.

Only an administrator can initiate a hard reset command.

The Power Management Console can be accessed when the Power Management Console is activated.

23.8 Keyboard key sequences

Click . A list of defined keyboard sequences appears. When clicked, these transmit directly to the Target Server, and will not affect the Client computer.

For example, select **Ctrl-Alt-Del** to send this three key sequence to the Target Server to initiate its Shutdown/Login process.

To add a keyboard sequence:

1. Click **Add/Remove**. The Special Key Manager box appears see Figure 18.

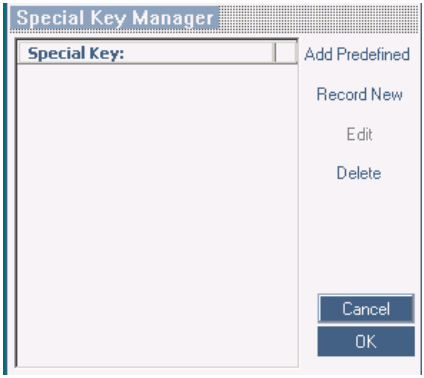

Figure 18 Special Key Manager box

To add a predefined sequence:

1. Click Add Predefined. A list of sequences appears.
2. Select the desired sequence and click OK. The sequence appears in the Special Key Manager box.
3. Click OK. The sequence appears in the Keyboard Key sequence list.

To record a key sequence:

1. From the Special Key Manager box press **Record New**. The Add Special Key box appears see Figure 19.

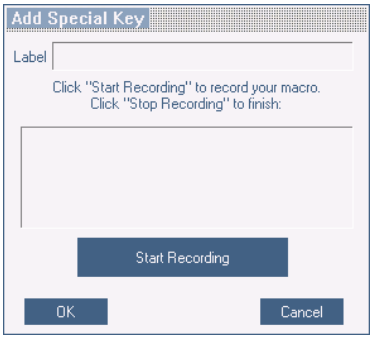

Figure 19 Add Special Key box

2. Give the key sequence a name in the Label box.
3. Click **Start Recording**.
4. Press the desired keys. The keys appear in the area provided.
5. Click **Stop Recording**.
6. Click **OK**.

To edit a key sequence:

1. From the Special Key Manager box select the desired key.
2. Click **Edit**.
3. Click **Start Recording**
4. Press the desired keys. The keys appear in the area provided.
5. Click **Stop Recording**.
6. Click **OK**.

23.9 Synchronizing mouse pointers

When working at the Client computer, two mouse pointers appear: The Client computer's is on top of the Target Server's. The mouse pointers should be synchronized. The following explains what to do if they are not synchronized.

Warning

Before synchronizing mouse pointers adjust the video of the Target Server, (explained above) otherwise mouse synchronization may not work..

23.9.1 Aligning the mice pointers

When accessing the Target Server, the mice may appear at a distance to each other.

To align the mouse pointers:

From the Toolbar click / **Align** or press **Ctrl+M** simultaneously. The mice align.

23.9.2 Calibrating mice pointers

A Target Server may have a different mouse pointer speed to the Client computer. Calibrating automatically discovers the mouse speed of the Target Server and aligns the two pointers.

To perform the calibration when the Target Server Operating system is, Windows NT4, 2000 or 98:

From the Toolbar click / **Calibrate**. IP Control saves this alignment so calibration is only needed once per Target Server.

If the Video Noise Level is above zero, calibration may not work. Go to Video Adjustment and try to eliminate the noise by pressing Auto video adjust and/or adjusting the bars in Manual video adjust, then perform the mouse calibration.

Note! If the mouse settings on the Target Server were ever changed, you must synchronize mouse pointers manually, as explained below.

23.9.3 Manual mice synchronization

If the mouse settings on the Target Server were ever changed, or when the Operating system on the Target Server is, Windows XP, Windows 2003 Server, Linux, Novell, SCO UNIX or SUN Solaris you must synchronize the mouse pointers manually.

To manually synchronize mouse pointers:

1. From the Toolbar click / **Manual Settings**. The **Mouse Settings** box appears see Figure 20.

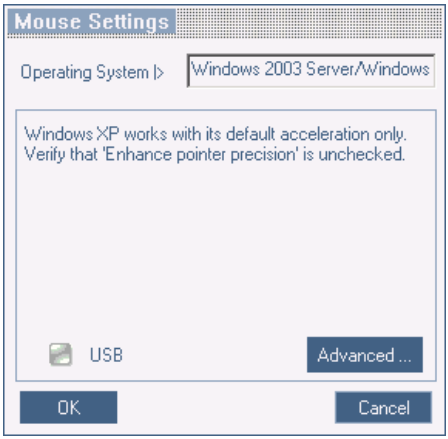

Figure 20 Mouse Settings box

2. Select the Target Server's Operating System and click OK. Instructions and sliders appear.
3. Follow the instructions and set any relevant sliders to the same values as set in the Target Server's Mouse Properties window.

2 examples!

For Windows XP, go to the Mouse settings on the Target Server and uncheck Enhance pointer precision.

For Windows NT4. If Mouse Properties were ever changed for the Target Server – even if they have been returned to their original state - uncheck default -

.

Click **OK**. The mouse pointers should be synchronized.

23.9.3.1 USB

The USB option in Mouse Settings box is available for RICC and X-RICC USB and Phantom Specter USB and for unsupported operating systems and SUN Solaris. Use this option if you are sure of the custom acceleration algorithm you are using, or have been informed so by customer support.

23.9.3.2 Advanced – Mouse Emulation

In the Advanced Mouse settings, you can set the type of mouse that you would like IP Control to emulate. We recommend not changing the advanced settings unless there is erratic mouse behavior (the mouse is making random clicks and jumping arbitrarily around the screen).

Click

the Mouse Emulation box appears see Figure 21.

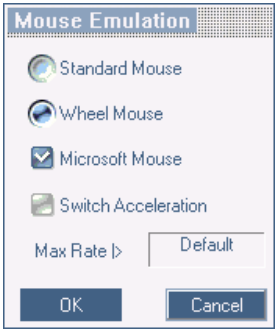

Figure 21 Mouse Emulation box

Select the mouse connected to the Local Console port on the IP Control, e.g. if the local mouse is a non-Microsoft 2 button mouse, select **Standard Mouse** and uncheck **Microsoft Mouse**.

Switch Acceleration - In some KVM switch brands (for example G&D, Rittal), the switch accelerates the mouse on top of the acceleration provided by the operating system. If necessary, check this option to compensate (decelerate) the switch acceleration and achieve full synchronization.

Max Rate - this defines the maximum mouse report rate. For Sun Solaris the default value is 20 in order to support older Sun versions.

23.10 Minicom logo menu features

Right click the Minicom logo , a menu appears. From this menu you can access the connected devices. You also have the following features:

Disconnect – You can disconnect the session by clicking Disconnect.

About - Click About to verify the Client, Firmware, KME (Keyboard/Mouse Emulation firmware) and Switch file versions installed on your IP Control.

Local Settings – Click Local settings, the Client Configuration box appears, see Figure 22

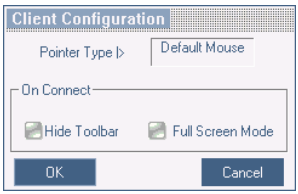

Figure 22 Client Configuration box

Pointer type – From the Drop-down menu you can change the Client computer mouse pointer to appear as a dot or to not appear at all.

Hide Toolbar – Check this option to hide the Toolbar from the next reconnection onwards. To toggle the Toolbar on and off, press **F9**. See above page 19.

Full Screen Mode - Check this option to make the remote session screen appear in full screen mode from the next reconnection onwards. To toggle the full screen mode on and off, press **F11**.

23.11 Disconnecting the remote session

To disconnect the session, on the Toolbar, click . The Login box appears. You can re-login or close the browser window.

24. Troubleshooting - Restoring factory defaults

Section 21 on page 17 explained how to restore factory settings from the Web interface. When you cannot access the system e.g. you have forgotten the Username or Password, you can restore factory defaults from the IP Control unit.

To restore factory defaults:

1. Press and hold down the Go-Local button for 3-4 seconds while powering up the IP Control. The device boots up in safe mode.
2. Wait until the unit finishes booting.
3. Login with the default IP address of the unit: http://192.168.0.155/config. (Do not start the address with **https**). The Login box appears see Figure 23.

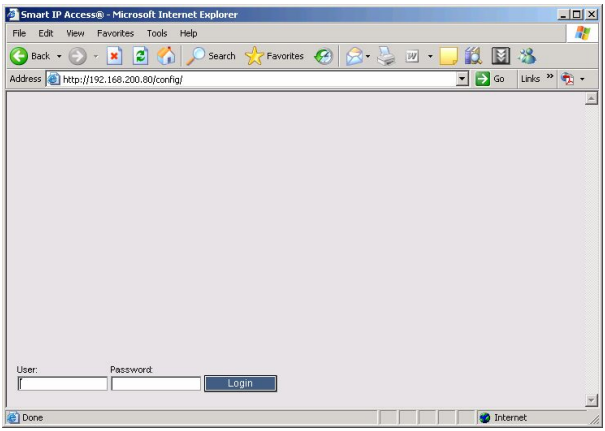

Figure 23 Login box

4. Type username: **admin** , password: **SAFEmode**. (Case sensitive). This username and password works only after the reset procedure described above. A menu appears.

5. From the menu choose **Restore Factory Settings**. A warning appears see Figure 24.

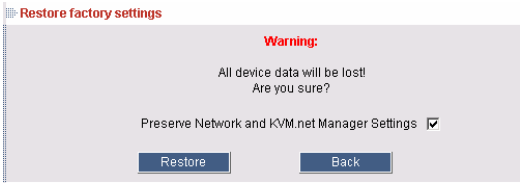

Figure 24 Restore factory settings

6. Check the box if you want to preserve Network settings.
7. Click Restore
8. Select Restore. The factory defaults are restored. When the process finishes Figure 25 appears.

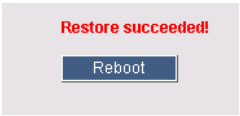

Figure 25 Reboot

9. Click **Reboot** to restart the unit.

25. Technical specifications

Operating systems	**Target Server** DOS, Win 3.1, 9X, 2000, XP, NT4, 2003 Server, Novell 3.12 – 6.5, Linux, SUN Solaris for PC **Client Computer** Windows 2000 or higher with IE 6.0 or higher and ActiveX
Resolution	**Target Server** Up to 1600 x 1200 @ 85Hz **Client Computer** Recommended - resolution should be higher than on Target Server
Video and mouse synchronization	Both auto and manual modes
Security	128-bit SSL encryption
Connections	**Ethernet** – RJ45 – 10/100 Mbit/sec autosensing **Serial** – RJ45 **Local KVM connection** – Screen HDD15, Keyboard./Mouse – MiniDIN6 **Computer / switch connection** –HDD15, KVM cable 1.8m. Monitor HDD15, Keyboard./Mouse – MiniDIN6
Weight	0.2kg / 0.45lb
Dimensions (H x D x W)	3 x 10 x 8 cm / 1.1 x 3.9 x 3.1in
Power consumption	3.3VDC, 1.3 A.
Operating temperature	0°C to 40°C / 32° to 104°F
Storage temperature	-40°C to 70°C/-40°F to 158°F
Humidity	80% non condensing relative humidity

26. Video resolution and refresh rates

Hz →	56	60	65	66	70	72	73	75	76	85	86
640x480		x		x	x	x		x		x	
720x400					x					x	
800x600	x	x				x		x		x	x
1024x768		x			x	x	x	x	x	x	
1152x864								x			
1152x900				x					x		
1280x720		x									
1280x768		x						x			
1280x960		x								x	
1280x1024		x				x		x	x	x	
1600x1200		x	x		x			x		x	

27. User guide feedback

Your feedback is very important to help us improve our documentation. Please email any comments to: ug.comments@minicom.com

Please include the following information: Guide name, part number and version number (as appears on the front cover).

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